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CENTRAL INTELLIGENCE AGENCY
OFFICE OF NATIONAL ESTIMATES

25 April 1963

MEMORANDUM FOR THE DIRECTOR

SUBJECT: Soviet Intentions Concerning a Manned Lunar Landing

SUMMARY

Three unmanned lunar launchings this year, together with other new evidence and further analysis, clearly indicate a continuing strong Soviet interest in lunar exploration. We still cannot state conclusively, however, that the Soviets are in a race with the US for a manned lunar landing. On balance, we have no basis for changing our earlier estimate that the chances are better than even that the Soviets will seek to accomplish a manned lunar landing ahead of or in close competition with the US. It remains possible, nevertheless, that Soviet lunar objectives are less ambitious.

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1. We last considered Soviet intentions concerning a manned lunar landing in NIE 11-1-62, "The Soviet Space Program," dated 5 December 1962, SECRET. In that estimate we noted that, despite various Soviet statements suggesting the existence of a manned lunar program, the top Soviet leaders had not committed themselves publicly to a race with the US, and were not likely to do so. Evidence at that time was inconclusive as to whether the Soviets were indeed competing with the US to put a man on the moon. However, we reasoned that unless they considered the cost prohibitive or concluded that the US had an insurmountable lead, they would probably be impelled to compete because of the prestige involved and because of the importance of such an achievement to later interplanetary operations. All things considered, we estimated the chances as better than even that the Soviets aimed to achieve a manned lunar landing ahead of or in close competition with the US, and noted that such a program could be well under way without our knowledge.

2. The estimate pointed out that a program for a manned lunar landing and return would require a series of major technical advances. These include the development of very large boosters,

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advanced upper stages, and improved guidance systems; further development of life support systems, radiation shielding, and re-entry techniques for the higher speeds involved in a return flight from the moon; and a considerable amount of unmanned lunar exploration.

3. The estimate also noted that the Soviets may attempt manned circumlunar and lunar satellite flights in connection with a manned lunar landing program. Such flights might be undertaken even if a manned lunar landing were not planned; although many similar techniques would be involved, these ventures would be considerably less demanding in terms of propulsion and other requirements than a manned landing and return. Moreover, we noted that if the Soviets should conclude that the US would win the manned lunar landing competition, they might reason that earlier Soviet manned lunar flights without landings would detract from the US triumph.

Recent Resumption of Lunar Shots

4. After a long hiatus following the two failures on 15 and 16 April 1960, there have been three unmanned lunar launchings this year. The first, on 4 January, failed to eject

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the spacecraft from parking orbit around the earth, as a result of a failure in the fourth stage similar to those which have occurred in six out of the last eight attempts at interplanetary flight. The second, on 3 February, failed to achieve parking orbit, apparently because of a failure in the third stage injection guidance system. The third and most recent attempt, the Luna IV shot on 2 April, was successfully ejected from parking orbit, and passed the moon at a distance of 5,300 miles.

5. These shots embodied considerable technical progress as compared with the attempts in April 1960. All of them employed the basic SS-6 ICBM booster used in previous lunar attempts. However, in contrast to the earlier shots which used the direct-ascent technique, these three attempts used the "parking orbit" technique previously used only on Mars and Venus probes. The use of this technique with a larger third stage and the addition of a fourth stage has enabled the Soviets to increase considerably the weight of their lunar probes. As compared with the 800 pound vehicles apparently used in April 1960, Luna IV weighed over 3,000 pounds; a vehicle of this size probably is capable of soft-landing an instrumented package of approximately 800 pounds on the moon, or putting a package of about 1,700 pounds into orbit

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around the moon. Initial reporting stated that the Soviets, for the first time, had attempted midcourse guidance when the vehicle was about 10,000 miles from earth, but further analysis of the tracking data makes this uncertain.

6. The choice of launch dates for the three attempts in 1963, together with the operational techniques used, suggests that their mission was either to soft land an instrumented package on the moon or to conduct close reconnaissance of the moon's surface from lunar orbit. Either mission would be suited to the collection of the information on the lunar surface required in preparation for a manned lunar landing, but would also have significance in a program of lunar exploration not involving the actual landing of a man on the moon. The evidence is inconclusive as to which of these missions was intended, but neither was accomplished. The distance at which Luna IV passed the moon precluded the collection of significant new data on the nature of the lunar surface.

Soviet Statements Relating to a Manned Lunar Landing

7. Regardless of the specific objective of Luna IV, Soviet propaganda repeatedly alluded to future manned flights to the moon

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in publicizing this operation. Much stress was laid on the necessity to determine conditions which would be encountered on the moon in a manned flight. TASS on 4 April even said that the ultimate goal was "to make the moon a giant launching pad for manned flights to the planets of the solar system."

8. As yet, there has been no authoritative Soviet statement openly accepting the US lunar challenge, but we would not expect such a statement unless and until the Soviet leaders are confident of their ability to compete successfully. In recent weeks we have received conflicting statements from Soviet sources. On the one hand, lower level Soviet sources have made statements which have a more competitive tone than we have noted in the past. For example, on 10 April, Soviet cosmonaut Gagarin stated in an interview that the USSR would definitely get to the moon, and that he believed that a Russian would be first. A few days later, his colleague Nikolayev expressed the conviction that a Soviet cosmonaut would be the first to "tread the moon's surface."

9. On the other hand, in an interview on 12 April, Khrushchev said that the Soviets could put a person on the moon but did not see any way to get him off. He added that the Americans said that they would be first to the moon and he stated

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that they would be welcome to this. Some statements made by Khrushchev in the past have accurately reflected actual developments in the USSR; others have been intended to confuse or to deceive. We cannot judge Khrushchev's intent in this case.

Analysis of Soviet Ground Facilities

10. The development of Area G at Tyuratam, which has been under way since mid-1962 at a pace suggesting high priority, provides an indication that a new large booster is being developed. Area G is quite extensive, and the facilities under construction seem to be at least as large as those of the SS-6 and space launching facilities at Area A. Moreover, the launch area contains very heavy construction and is rail-served. Our information does not permit any very definite conclusion about the type of vehicle for which Area G is intended, but the high priority construction of a new, large launch area at this time might reasonably be interpreted as pointing to a new, big booster program which is to reach flight test stage in the next year or so.

11. The activity at Area G may be associated with the Soviet ICBM program, the space program, or both. It could relate to the

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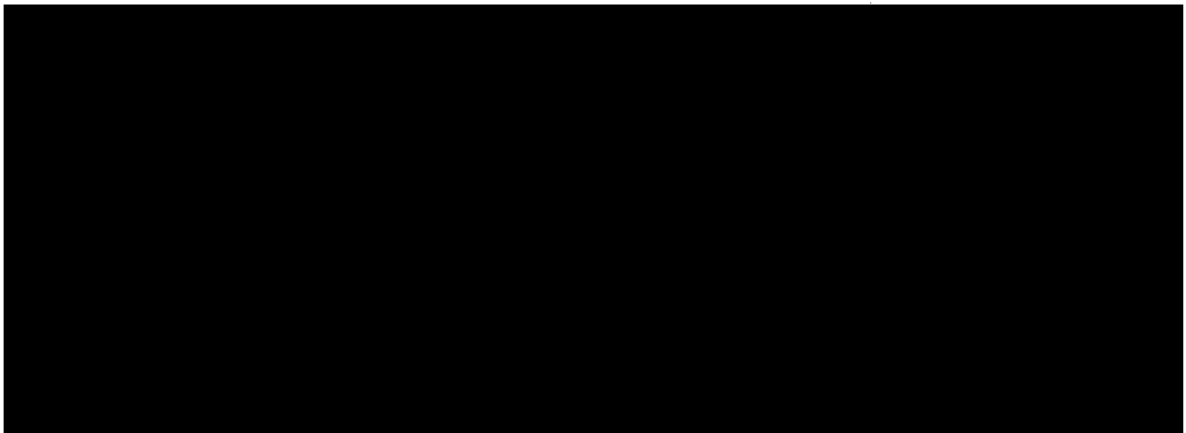
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development of a new ICBM system capable of delivering 100 MT warheads. The booster for this ICBM system, which would require a thrust of about 1-1½ million pounds, could have a variety of space applications. Area G could also relate to the development of a very large booster, with a thrust of several million pounds, intended primarily for space ventures. This development would significantly increase the likelihood that the Soviets will attempt a manned lunar landing. It would still not provide conclusive evidence, however, since a very large booster might be intended for other space missions, including the launching of very heavy earth orbital vehicles or planetary probes.

12. After extensive analysis, we have concluded that information on static test facilities in the USSR provides no indication of the current status of Soviet development of large booster

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production lines. Therefore, although some of the known test stands might be capable of testing very large single or clustered engines, we are unable from the evidence concerning these facilities to determine whether the Soviets are developing such a booster.

Conclusions

13. We still cannot state conclusively that the Soviets are aiming for a manned lunar landing in competition with the US. Some evidence since the publication of NIE 11-1-62 suggests that the Soviets are engaged in this race, but much of it is also consistent with less ambitious lunar projects. On balance, we have no basis for changing our earlier estimate that the chances are better than even that the Soviets will seek to accomplish a manned lunar landing ahead of or in close competition with the US.

14. We estimated in NIE 11-1-62 that systematic lunar exploration was possible as early as 1962, and that suitable boosters with multimillion pound thrust, together with advanced upper stages, could be initially test flown in about 1964. We further estimated that with a strong national effort, and with a high degree of success, the Soviets could accomplish a manned lunar landing in the period 1967-1969. The new evidence provides

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us with no basis for changing these dates or for better judging
the status of such a program.

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